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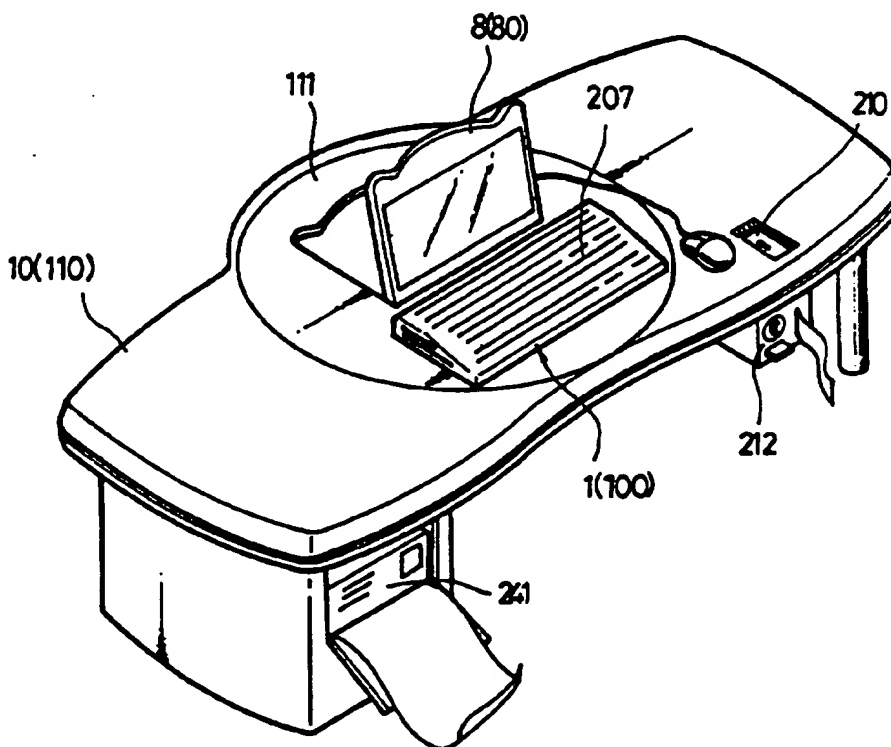
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**(54) Title:** COMPUTER TABLE SYSTEM

**(57) Abstract**

A computer table system includes a rotatably movable member consisting of a multi-functioned keyboard on which various functions of the computer is integrated. The rotatably movable member has double functions, a keyboard and a flat board, which are interchangeable by turning over the rotatably movable member according to the user's intention. The keyboard is rotatably movable in up/down and left/right directions, and further a view angle of a screen display is also adjustable. The computer table system is comprised of a table upper panel (10) with an opening (30); a rotatably movable member (1) installed within the opening (30), both central parts of the rotatably movable member (1) including rotating axles formed thereon to allow the rotatably movable member (1) to move in up/down directions; an input board (11) formed on a first surface of the rotatably movable member (1) for inputting various commands into a computer.



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## SPECIFICATION

## COMPUTER TABLE SYSTEM

## FIELD OF THE INVENTION

The present invention generally relates to a computer table system and, more particularly, to a computer table system in which most of the functions that a personal computer has are integrated into a keyboard. Such multi-functioned keyboard is rotatably movable in up/down as well as left/right directions. Further, the view angle of a screen display is freely adjustable.

## BACKGROUND ART

Conventionally, it is well known that when using a computer, a separate table for placing a monitor, a keyboard, and a computer main body is generally used, otherwise a modified table for vertically raising up the monitor from the bottom to the top of the table is used.

Korean Patent Publication No. 92-3092 discloses a storage box for keeping papers or office supplies in a storage house formed on a side of the table. The storage box is risen and fallen by an elevating means and a driving means for driving the elevating means.

Korean Utility Model Publication No. 96-13193 discloses a computer table in which a bookshelf can be elevated from a rear side of the table passing through the upper panel thereof.

The former invention proposes several embodiments of the elevating structure. In each embodiment, the storage house can be risen and fallen from the rear side of the table respectively by means of a chain-gearing, a number of pulley belts, or a bevel gear. In case of the latter invention, the bookshelf is risen and fallen by rotating a spiral axle, using a bevel gear.

As proposed above, there is a well known structure that the storage box is prepared in the rear side of the table or the bookshelf thereby capable of being risen and fallen under the table. However, it is not known that many functions of the computer is integrated into the keyboard and further, the keyboard can be turned over on the table to form a table surface, and the position of the keyboard is adjustable in left/right or up/down directions for the user's convenience.

In general, a personal computer includes a monitor, a keyboard and a computer main body. Therefore, when an operator uses the computer, the operator must position the monitor near the working place, and handle a CD-ROM, a FD (Floppy Disk) driver, a modem, a power switch which are respectively positioned difference places, thereby giving the operator troubles. Recently, there is a growing tendency that the computer includes a speaker and a microphone additionally to supply cubic effects in accordance with the image displayed on the screen.

In recent, vending machines for coffee, beverages, and tobacco are widely installed, and the vending machines employs a cash or credit card injection system to consult convenience of the public and to raise the popularity.

Futhermore, a computer table or a computer desk must be prepared separately from the computer which is divided into a monitor, a keyboard and a main body. Therefore, when purchasing the equipments, the user must pay high price to purchase the individual components. In particular, in the most of the job sites where a computer table is used, additional spaces must be prepared. Further, since the computer is taken into custody as being always exposed to the exterior, the computer may be covered with the dust and sometime collided with the other equipments, thereby causing the hinderance of the equipments. In some worst case, if the interior of the computer which is comprised of many precision electronic devices is exposed to the exterior, the PCB (printed circuit board) may be easily eaten away with rust or an alien substance may damage

the electric contacts of the PCB, thereby causing a trouble for taking the computer into custody.

In addition to the problems mentioned above, it is very difficult to have the computer system be isolated completely from the exterior, so that it may be hard to realize a payable computer system which is to be installed in the public places.

### DISCLOSURE OF INVENTION

It is therefore an object of the present invention to provide a novel computer table system with a highly improved usefulness, capable of utilizing an office space more intensively and embodying a computer operating environment specially designed in view of the biotechnology and office automation.

It is another object of the present invention to provide a computer table system which occupies the smaller office space and can protect a computer and its peripheral devices from the exterior and the dust by employing a computer safe-keeping structure of the storage house style (strictly speaking, a rotatably movable style).

It is still another object of the present invention to provide a computer table system having a multi-functioned keyboard on which various functions of the computer is integrated.

It is still another object of the present invention to provide a computer table system having double functions, a keyboard and a flat board, which are interchangeable by turning over a rotatably movable member according to the user's intention.

It is further another object of the present invention to provide a computer table system capable of freely adjusting a view angle of a monitor mounted on the table.

It is further another object of the present invention to provide a computer table system employing a cash injection system for the public use.

It is still another object of the present invention to provide a low cost computer table system.

### BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is an assembly drawing of a computer table system having a keyboard input part according to the present invention;

Fig. 2 is a perspective view showing a state that a first side, the keyboard input part, of a rotatably movable member of the computer table system is turned over and a rear side thereof faces upward according to the present invention;

Figs. 3A and 3B are cross sectional views showing a locking structure of the rotatably movable member of the computer table system according to the present invention;

Fig. 4 is a perspective view showing a rotatably movable device of the computer table system according to a first embodiment of the present invention;

Fig. 5 is a perspective view showing a rotating device of the computer table system according to a second embodiment of the present invention;

Fig. 6 is a perspective view showing a rotating device of the computer table system according to a third embodiment of the present invention;

Fig. 7 is a perspective view showing a manual rotating device of the computer table system according to an embodiment of the present invention;

Fig. 8 is a perspective view showing a state that a CD-ROM is mounted on the rotatably movable member of the computer table system according to a first embodiment of the present invention;

Fig. 9 is a perspective view of the rotatably movable member of the computer table system according to a second embodiment of the present

invention;

Fig. 10 is a perspective view of a rotatably movable member of the computer table system according to a third embodiment of the present invention;

Fig. 11 is a perspective view of a rotatably movable member of the computer table system according to a fourth embodiment of the present invention;

Fig. 12 is a perspective view of a view angle adjustment device of a screen display of the computer table system according to a first embodiment of the present invention;

Fig. 13 is a perspective view of a view angle adjustment device of a screen display of the computer table system according to a second embodiment of the present invention;

Fig. 14 is a perspective view of a view angle adjustment device of a screen display of the computer table system according to a third embodiment of the present invention;

Fig. 15A is a perspective view showing a state that a CRT is used for the screen display according to an embodiment of the present invention;

Fig. 15B is a perspective view showing a state that a rotatory axle of the screen display is installed on a central part according to the present invention;

Fig. 16 is a perspective view showing a state that a keyboard of a rotatably movable member is turned over and a screen display is installed on the computer table system according to the present invention;

Fig. 17 is an assembly drawing of Fig. 16;

Fig. 18 is an exemplary drawing showing an operation of the keyboard of the rotatably movable member and the screen display according to the present invention;

Fig. 19 is a perspective view of a rotatable board according to an embodiment of the present invention;

Fig. 20 is a perspective view of a rotatable board according to another embodiment of the present invention;

Fig. 21 is a cross sectional view showing an assembled state of the rotatable board of Fig. 20;

Fig. 22 is a partially enlarged diagram of Fig. 21;

Fig. 23 is a block diagram of a switching device for controlling the table control system according to the present invention;

Fig. 24 is a perspective view showing operation of the computer table system according to the present invention; and

Fig. 25 is a perspective view showing a modified computer table system according to another embodiment of the present invention.

### BEST MODE FOR CARRYING OUT THE INVENTION

A computer table system according to the present invention includes a table upper panel; table legs; an opening formed by making a hole in a specific area of the table upper panel, passing through the table upper panel; a rotatably movable member installed within the opening, both central parts of the rotatably movable member including rotatory axles formed thereon to allow the rotatably movable member to move in the up/down directions; an input board formed on a first surface of the rotatably movable member for inputting various commands into the computer; a flat board formed on a second surface of the rotatably movable member, the flat board having the same horizontal level as that of the surface of the table upper panel when the rotatably movable member is turned over; a locking device formed on a specific area of an inside circumference of the opening, for controlling the movement of the rotatably movable member, the locking device being placed at a corresponding edge of the rotatably movable member; whereby the input board and the flat board are alternatively interchanged as the rotatably movable member turns over in the opening of the table upper panel.



The computer table system according to the present invention further includes a rotating device mounted between both sides of the rotatably movable member and corresponding areas on the opening of the table upper panel. Further, the control board or the input board formed on the rotatably movable member is a keyboard. The locking device includes an elastically-repelling structure formed on a circumference of the rotatably movable member, an end of the elastically-repelling structure being sloped, and a corresponding joint hole formed in the opening, so that the rotatably movable member may freely rotate in a desired direction. The table upper panel includes a left/right rotatable board, an opening on which the left/right rotatable board is slidably installed, a rotatably movable member consisting of the input board and the flat board so as to permit the up/down rotatable movement thereof within the left/right rotatable board, an opening where the rotatably movable member freely rotates, whereby the left/right rotating board is freely rotatable in the left/right direction within the table upper panel and at the same time, the rotatably movable member is freely rotatable in the up/down direction.

Moreover, the computer table system according to the present invention includes a screen display mounted on the table upper panel, so as to allow an operator to use the computer in association with the keyboard. The computer table system further includes a switching device for controlling the rotatably movable member and the locking device. The rotatably movable member includes a rotating device which consists of a driving motor, a reduction gear mounted on the axle of the driving motor, a driven gear mounted on the axle of the rotatably movable member, a chain coupled to the driven gear, a driving gear mounted on an axle of the reduction gear so as to transfer a rotating power to the chain. Alternatively, a bevel gear may be mounted between an axle of the rotatably movable member and the reduction gear of the driving motor. Instead, the computer table system may include the rotatably movable member and a manual handle which is attachable and detachable to/from the axle of the rotatably movable member. In addition, in order to allow the

left/right rotatable board to slidingly rotate, a bearing member is mounted on the bottom surface of the left/right rotatable board. Further, the screen display is mounted on the left/right rotatable board, so that the screen display may rotate together with the keyboard thereby facilitating the position control of the equipment to the user's position. To achieve an object of controlling the view angle of the screen display, the rotatable board includes a driving motor mounted on a lower axle of the screen display, a reduction gear mounted on a shaft of the driving motor, a driven gear mounted on the lower axle of the screen display, a driving gear mounted on an axle of the reduction gear for transferring a rotating power to the driven gear, so that the screen display may rise with a constant angle and is fixed safely at a desired position. Alternatively, the rotatable board includes a bevel gear mounted between the lower axle of the screen display and the reduction gear of the driving motor so that the screen display may rise up and fall down with respect to the lower axle of the screen display. The screen display used in the computer table system according to the present invention may be of an LCD (Liquid Crystal Display) or a CRT (Cathode Ray Tube). The computer table system is further provided with a coin driving device to allow the switching device to operate in response to a switching signal activated by detecting a coin injection, thereby providing a coin injection type computer table system. Moreover, the keyboard which is an input board mounted on the rotatably movable member may include a CD-ROM, a FD driver, a modem, a microphone, and a speaker, thereby integrating most of the computer control functions into the keyboard. A guide groove and a guide protrusion are respectively formed along an inside circumference of the opening and the corresponding side edge of the rotatably movable member, thereby assisting the up/down rotating movement of the rotatably movable member. Further, a buffer member is formed along the inside circumference of the opening and the corresponding side edge of the rotatably movable member, so as to reduce the contact noise which may be generated during the up/down rotatory movement of the rotatably movable member. The

locking device includes a locking member for blocking the rotatory movement of the rotatably movable member upon popping out from a lower part of the table upper panel, and a solenoid for moving the locking member forwardly and backwardly, thereby securing a firm locking of the rotatably movable member.

As stated above, the computer table system according to the present invention includes, in an inside of the table, a main unit which is comprised of a CPU (Central Processing Unit), a main board, a mode, various peripheral devices, a sound card, a power distribution board, an input device, and an output device; and, in a central part thereof, a monitor, a speaker, a microphone, a keyboard, a joy stick, various cables, a monitor angle control device, and a elastic member.

It can be understood from the above explanations that such multi-functioned computer can be easily and quickly operable under or on the table, removing the problems of the conventional computer table. Further, since the monitor is rotatable 360° in any direction, the user may easily adjust the position and angle according to the working position. Otherwise, while the computer is not used by the users, the computer system may put an advertisement including advertising image and the corresponding sound information through the screen display and the speaker.

Accordingly, the utilization rate of the tale can be increased upto almost 100%, and an erroneous operation and frequent hinderance may be prevented. Further, since the printer and various devices are integrated into one body, the computer table system has a high efficiency. Also, the natural environment may be protected from the synthetic resin and the lead due to the reduced use of the PCB. Additionally, the noise problem can be settle, which may arise when the various devices are exposed to the exterior like the conventional computer table.

Hereinbelow, a computer table system according to the preferred embodiments of the present invention will be explained with reference to the accompanying drawings.

Fig. 1 is an assembly drawing for perspective showing the rotatably movable member having the keyboard separated from the computer table according to the present invention. Fig. 2 is a perspective view showing a state that the rotatably movable member is turned over so that the first surface (keyboard) thereof faces to the ground and the second surface (flat board) thereof faces to the sky.

As shown in Figs. 1 and 2, according to a first embodiment of the present invention, a computer table system includes a table upper panel 10, table legs 60, an opening 30 formed by making a hole passing through the table upper panel 10, a rotatably movable member 1 having an axle member 40 of a pivot extending from both sides thereof, the axle member 40 being supported by an axle support 38 of the opening 30, thereby allowing the rotatably movable member 1 to rotatably move on the table upper panel 10.

The rotatably movable member 1 as a panel piece fitting the table upper board 10 has a first surface on which an input board (keyboard) 11 is formed to input various instruction commands to the computer, and a second surface (flat board) 12 having the same horizontal level as that of the table upper panel 10 when the rotatably movable member is turned over.

As shown Figs. 3A and 3B, the computer table system according to the present invention includes a locking device 2 installed along an edge of the rotatably movable member 1 and an inside circumference of the opening 30, in order to firmly block the rotatory movement of the rotatably movable member 1, when the user wants to use the rotatably movable member 1 as a keyboard or a flat board.

The locking device 2 may employ a common door stopper, as shown in Figs. 3A and 3B. Namely, as shown in Fig. 1, a joint hole 22 is formed on an inside circumference of the opening 30 of the fixed upper panel 10, and a joint structure 21 consisting of a slope side 21a for slidingly contact with an entrance of the joint hole 22 when rotatingly moving up, and an engaging side

21b which is engaged to the joint hole 22 when rotatingly moving down. Therefore, the rotatably movable member 1 can be rotated into only one direction and firmly fixed without any swing. Alternatively, the locking device consists of the joint hole 22 which is electrically magnetized to engage the joint structure 21 thereinto; otherwise the locking device consists of a solenoid 24 operating in association with a projecting member 23 which is designed to project electrically.

According to the present invention, there are several embodiments of the rotating device 3 which is mounted between both sides of the rotatably movable member 1 and the corresponding areas of the opening 30 of the table upper panel 10, for rotating the rotatably movable member 1 in the up/down directions.

Referring to Fig. 4, according to an embodiment of the present invention, the rotating device 3 of the rotatably movable member 1 includes a driven gear 39 mounted on the axle member 40 and a driving gear 34 which is coupled to the driven gear 39, the driving gear 34 being mounted on the driving motor 31 and the reduction gear 32.

Referring to Fig. 5, according to another embodiment of the present invention, the rotating device 3 of the rotatably movable member 1 includes the driving motor 31 which is driven in response to an electrical switching signal, the reduction gear 32 mounted on the axle of the driving motor 31, the driven gear 39 mounted on the axle member 40 extending from the rotatably movable member 1, a chain 33 coupled to the driven gear 39, the driving gear 34 mounted on the axle of the reduction gear 32 of the driving motor 31 in order to transfer the rotating power to the chain 33.

Referring to Fig. 6, according to still another embodiment of the present invention, the rotating device 3 of the rotatably movable member 1 includes bevel gears 35, 36 mounted between the axle member 40 of the rotatably movable member 1 and the reduction gear 32 of the driving motor 31, thereby to transfer the rotating power.

Referring to Fig. 7, the rotating device 3 of the rotatably movable member 1 includes the axle member 40 of the rotatably movable member 1 and a manual handle 37 which is attachable and detachable to/from the axle member 40 of the rotatably movable member 1. The detailed explanation over the manual handle 37 will be omitted in this specification.

Now, referring to Fig. 8, according to a first embodiment of the present invention, an input board 11 of the rotatably movable member 1, 100 includes a keyboard. It should be noted that the input board 11 of the rotatably movable member 1 may further include a CD-ROM driver 14, according to this embodiment of the present invention.

The rotatably movable member 1, 100 may further include, in addition to the keyboard, an FD driver 15 mounted on a side thereof, a speaker 17 mounted on a front side thereof, a microphone 16 mounted on a rear side thereof, a mouse underpinning 18, and a joy stick (not shown), as shown in Fig. 9.

With reference to Fig. 10, the rotatably movable member 1, 100 according to another embodiment of the present invention includes guide means mounted between the opening 30, 103 and the rotatably movable member 1, 100. The guide means includes a number of guide grooves 51 and guide protrusions 52, respectively formed along the inside circumference of the opening 30, 103 and the corresponding side walls of the rotatably movable member 1, 100, thereby to secure a smooth rotation of the rotatably movable member 1. It should be noted that the locking device 2 can be also mounted on the guide protrusions 52 and the guide grooves 51 in the same manner as stated above.

Referring to Fig. 11, the rotatably movable member 1, 100 according to another embodiment of the present invention includes a buffer member 50 mounted along the inside circumference of the opening 30, 103 and the corresponding side walls of the rotatably movable member 1, 100, so as to remove the contact noise which may be generated while contacting with the

inside circumference of the opening 30, 103.

As described above with reference to Figs. 10 and 11, the rotatably movable member 1, 100 according to the present invention may be provided with the guide member and the buffer member.

Meanwhile, a screen display 8, 80 is prepared on the table upper panel, in common with the rotatably movable member 1, according to an embodiment of the present invention. Namely, as shown in Figs. 16 through 18, the table upper panel 110 consisting of the rotatably movable member 100 mounted thereon further includes the screen display 8, 80 in a storage house. In particular, as shown in Fig. 16, a glass panel is additionally installed in front of the screen display 80 to protect the monitor screen. In some cases, the screen display 70 can be of a CRT (Cathode Ray Tube) instead of an LCD (Liquid Crystal Display) as shown in Fig. 15A.

Furthermore, as shown in Fig. 15B, a view angle of the screen display 8, 80 is adjustable based on a central axle thereof.

Referring to Figs. 20 and 21, according to an embodiment of the present invention, the screen display 80 can also be installed on the table upper panel 110 including a rotatable board 111.

The view angle of the screen display 8, 80 mentioned above is adjustable so as to face to a front side of the user as shown in Figs. 18 and 22.

In more detail, the angle adjustment of the screen display 8, 80 can be done by installing bevel gears 86, 87 among a lower axle 81, a driving motor 82, and a reduction gear 83, as shown in Fig. 12.

Referring to Fig. 13, the screen display 8, 80 according to another embodiment of the present invention includes a driving motor 82 mounted on the lower axle 81 of the screen display 8, 80, a reduction gear 83 mounted on the axle of the driving motor 82, a driven gear 85 mounted on the lower axle 81, and a driving gear 84 mounted on the axle of the reduction gear 83 of the driving motor 82 so as to transfer the rotating power to the driven gear 85.

Referring to Fig. 14, the screen display 8, 80 according to still another embodiment of the present invention includes a chain gear 88 installed on the axle of the reduction gear 83 unified with the driving motor 82, a chain gear 90 installed on the lower axle 81, and a chain 89 for coupling between the chain gears 88, 90, so as to change the view angle of the screen display 8, 80. Such driving structure stated above can also be employed to the view angle adjustment of the screen display shown in Fig. 15B. Moreover, the screen display stated above can also be employed to the CRT display as shown in Fig. 15A.

According to another embodiment of the present invention, the computer table system includes a rotatable board on which the rotatably movable member and the screen display as stated above are mounted.

In detail, the round rotatable board is installed on a circle with a predetermined diameter formed on a central part of the table upper panel 110.

Referring to Fig. 19, a divided table upper panel 110 according the present invention includes an opening 112 formed by making a hole with a specific diameter at a central area of the upper panel 110, and a left/right rotatable board 111 mounted on the opening 112. The left/right rotatable board 111 has a sliding structure formed along the opening or a joint structure for transferring the rotating power. The left/right rotatable board 111 includes a rotatably movable member 100 having the same structure and functions as that of the rotatably movable member 1 mentioned above.

In more detail, the rotatable board 111 is freely rotatable in the left/right direction on the table upper panel 110 and, further, the rotatably movable member 100 is movable in the up/down direction. The rotatably movable member 100 has the same functions as stated above.

The rotatable board 100 includes a bearing member 104 for securing a sliding movement of the rotatable board 100 on a support board 106 of the opening 112.

Fig. 21 is a cross sectional view of the computer table assembly



consisting of the rotatable board 111, the rotatably movable member 100 and the screen display 80. As shown in the drawing, a plurality of bearing members 104 are installed with a constant distance on the bottom surface of the rotatable board 111, so as to secure the rotatory movement of the rotatable board 111. Further, a rack gear 107 is mounted with a predetermined diameter making a round along a protrusion 105 which is projected from the bottom surface of the rotatable board 111. The rack gear 107 is coupled with a pinion gear 108 mounted on an axle of a driving motor 109 which is installed on a specific area of the opening 112.

In particular, as shown in Fig. 20, the screen display 80 is assembled with the left/right rotatable board 111 of the table upper panel 110.

The view angle adjustment system 70 explained with reference to Fig. 15A is also applicable to this embodiment.

In detail, a CRT can be used for the screen display 80. In this case, the opening 112 has a shape as shown in Figs. 19 and 20 so as to keep the screen display 80 into custody. The bottom portion excepting the opening 112 constitutes the support board 106 and the CRT is assembled with the left/right rotatable board 111 while the rotatable board 111 is unassembled from the table upper panel 110.

The view angle of the screen display 8, 80 employed on all the different table structures is adjustable so as to allow the screen display to face to the user as shown in Figs. 18 and 22.

In most cases, the above explained view angle adjustment system can be employed to the screen display 8, 80. In detail, the view angle adjustment of the screen display 8, 80 can employ any selected one of the bevel gear driven method of Fig. 12, the multiple gear driven method of Fig. 13, and the chain-gearing method of Fig. 14. Referring to Fig. 22, the rotatable board 111 according to an embodiment of the present invention includes the pinion gear 108, the rack gear 107, the screen display of an LCD, and the rotatably movable member 100 having the keyboard.

The computer table system according to the present invention consists of the rotating device 3 having a driving motor, the screen display with the view angle adjustment structure, the left/right rotatable board on the table upper panel, the locking device 2, the CD-ROM, the FD driver, the modem, the speaker, the microphone, the joy stick, a printer, and an electrical control device for electrically controlling operation of the computer based on a cash injection.

Referring to Fig. 23 showing a block diagram of the switching device employed to the present invention, the device includes an input device 100 for inputting data representative of the kind and options of multimedia services according to the user's intention, a control device 200 for controlling the overall system in response to the data from the input device 100, a recognition device 208 for recognizing the money or credit card injected by the user and generating a recognizing output signal to the control device 200, a first memory device 203 and a main operation device 201 for generating various multimedia service data stored the memory device in response to the control signal from the control device 200 and storing the output data into the first memory device 203, a communication device 202 for an on-line communication responding to a control signal output from the control device 200, a second memory 204 for storing a service program according to the user's intention and loading the stored program, a display device 80 for displaying the multimedia data and messages in response to the control signal output from the control device, a cash box 210 for containing cashes to pay back the balance in response to the control signal output from the control device, a first printing device 241 for printing out a receipt for the particulars of using the multimedia devices in response to the control signal output from the control device, a second printing device 212 for printing out the service data required by the user in response to the control signal output from the control device, and a balance display device 209 for displaying the balance of the money that the user injected for the service.

In the figure 23, 206 indicates a device for control rotation of keyboard

100 and for control angle of display device 80

As shown in Figs. 24 and 25, the switching signal of the switching device stated above is driven by the cash recognition device.

The switching device shown in Fig. 23 controls operations of the rotatably movable member 10, 100, the view angle adjustment structure of the screen display 8, 80, the driving device of the rotatable board 111, the first and second printers 241, 212, and the cash injection driving system.

Fig. 24 shows a finished product of the computer table system according to a preferred embodiment of the present invention. More preferably, the printer structure may be eliminated as shown in Fig. 25. As shown in the drawing, the printing structure is partially eliminated and the coin injection system is installed on the table leg.

Operations of the computer table system according to the above mentioned embodiments of the present invention will now be explained with reference to the accompanying drawings. As stated above, the computer table system according to the present invention includes the table upper panel 10 having table legs 60, and the rotatably movable member 1 of which both axles are supported by the axle support 38 as an axle member 40 made of a pivot formed on the opening of the table upper panel 10. Therefore, the rotatably movable member 1 is rotatably movable in the up/down direction with a slight pressing, and then is fixed by operation of the locking device 2 shown in Figs. 3A and 3B, for the alternative use of the keyboard or the flat board.

With reference to the operation of the locking device 2, the joint structure 21 formed on the rotatably movable member 1 slidably guided, making contact, into the joint hole 22 formed on the inside circumference of the opening 30 of the table upper panel 10, and then a rotation in reverse direction is prevented by means of the engaging side 21b which is firmly engaged with the joint hole 22. If the joint structure 21 is of an electrically magnetizable joint structure, the joint structure 21 will be firmly locked into the joint hole 22. In this case, the locking/unlocking is performed by means of a

solenoid 24 operating in association with the projecting member 23 which travels along the joint hole 22.

The locking device according to the present invention may include a set of electric magnets with opposite magnetic polarities, respectively attached on the guide groove 51 and the guide protrusion 52 of Fig. 10. Therefore, the rotatably movable member 1 can be fixed by locking/unlocking operation responding to an electrical control signal, and can be alternatively used for the keyboard of the first surface or for the flat board of the second surface. In the rotating device 3 for rotating the rotatably movable member 1 according to the embodiment shown in Fig. 4, the rotatably movable member 1 is driven by the driving gear 34 which is coupled to the driven gear 39 mounted on the axle member 40 of the rotatably movable member 1 by driving the driving motor 31.

Of course, the rotatably movable member 1 can be fixed by means of the locking device.

Referring to Fig. 5, if a driving signal is applied to the driving motor 31 which is driven based on an electrical switching signal, the driving gear 34 mounted on the axle of the reduction gear 32 of the driving motor 31 transfers a rotating power to the chain 33, so as to drive the driven gear 39 mounted on the axle member 40 of the rotatably movable member 1, thereby rotating the rotatably movable member 1 into a desired direction and thereafter locking the locking device 2 responding to the locking signal.

Referring to Fig. 6, the bevel gears 35, 36 mounted between the axle member 40 of the rotatably movable member 1 and the reduction gear 32 of the driving motor 31 rotates, thereby to rotate the rotatably movable member 1.

With reference to Fig. 7, the rotatably movable member 1 rotates by means of the manual handle 37 which is attachable and detachable to/from the axle member 40.

All the devices of the present invention are selectively operated by the control signals supplied from the switching device.

In the meantime, as shown in Fig. 19, the rotatably movable member

100 is rotated in the left/right direction according to the rotation of the left/right rotatable board 111, thereby facing to the user.

Namely, the rotatable board 111 is slidingly rotated by means of the bearing member 104 which is also slidingly rotated over the inside sill 105 of the opening 102. Further, the rack gear 107 formed on the inside sill 105 is coupled with the pinion gear 108 mounted on the driving motor 109, thereby securing rotation of the rotatable board 111, as shown in Fig. 21.

As a result, the left/right rotatable board 111 is rotatable in the left/right direction on the table upper panel 110 and, at the same time, the rotatably movable member 100 is also rotatable in the up/down direction.

Furthermore, in case where the table upper board 110 includes the left/right rotatable board 111 as shown in Fig. 20, the CRT as a screen display may be kept into custody at the opening 112. Further, as shown in Figs. 15A and 15B, the CRT 70 can be rotated based on the central axle thereof.

As shown in Figs. 16 through 18, the screen display 80 is mounted on the table upper panel 110 and includes the rotating device mentioned above for adjusting the view angle thereof.

In detail, the view angle adjustment of the screen display 8, 80 can be embodied in various methods. First, as shown in Fig. 12, the view angle of the screen display 8, 80 can be adjusted by means of the bevel gears 86, 87 mounted between the lower axle 81 and the reduction gear 83 of the driving motor 82. Alternatively, as shown in Fig. 13, the view angle of the screen display 8, 80 can be adjusted by transferring the rotating power of the driving motor 82 to the driven gear 85 mounted on the lower axle 81 of the screen display 8, 80. Further, the view angle of the screen display 8, 80 can be adjusted by the chain 89 coupling the chain gear 90 mounted on the lower axle 81 with the chain gear 88 mounted on the reduction gear 83 of the driving motor 82, as shown in Fig. 14.

The computer table system according to the present invention has the rotatably movable member 1 which includes the CD-ROM driver 14, the FD

driver 15, the speaker 17, the microphone 16, and the mouse placing board 18, in addition to the keyboard.

Furthermore, the buffer member 50 secures the smooth rotation of the rotatably movable member 1, 100 and reduces the contact noise which may be generated while the rotatably movable member rotates making contact with the inside circumference of the opening 30, 103.

As shown in Fig. 25, the computer table system according to the present invention employs the coin driving device for operating the switching device, so as to allow the public to use the computer system more conveniently.

The computer table system includes, as shown in Fig. 24, the printers, the switching device employing the cash recognition system. In this case, the computer table system is preferably provided with additional devices such as the credit card or coin injection device, the balance refunding device, etc. Further, the computer table system can be modified as shown in Fig. 25.

The computer table system, designed by considering the biotechnology and the office automation, according to the present invention can solve all the problems of the conventional computer table system and is capable of utilizing the office space more intensively and more conveniently. Moreover, the computer table system according to the present invention occupies the smaller office space and can protect the computer and its peripheral devices from the exterior and the dust by employing a computer safe-keeping structure of the storage house style (strictly speaking, the rotatably movable style). Additionally, most of the functions that the computer has are integrated into the keyboard and the keyboard can be readily replaced with the flat board for the difference uses. The technique used for the rotatably movable member is also applied to control the view angle of the monitor.

The computer table system also includes the left/right rotatable board on which the rotatably movable member having the keyboard is movable in the up/down direction. Therefore, the direction of the monitor and the keyboard can

be freely changed to face to the user, so as to contribute to the convenience of the user at any places such as the street and the public places. The computer table system has double functions of a general table and a computer table for the computer and the peripheral devices, so that the utility and the convenience of the computer table may be increase. Further, since the computer table system includes the rotatable board consisting of the screen display with the view angle adjustment device, the user will not have any difficulty in working with the computer at any positions.

It should be appreciated from the above description that the computer table system according to the present invention gives the owner an advantages of an easy management and a high earnings, and gives the public an advantage of a convenient use of the computer with a low expenses at any time and any places, for example, a waiting room, coffee shop, restaurant, convenient store, beauty shop, hospital, clinic, hotel, etc. Therefore, the computer table system is very useful to the modern information era that requires quick information. As can be appreciated from the above, since the computer table system according to the present invention can be freely installed irrespective of the places, the circumference space may be maximally utilized.

Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of the present invention being limited only by the terms of the appended claims.

## CLAIMS

1. A computer table system comprising:

a table upper panel (10);

a plurality of table legs (60);

an opening 30 formed by making a hole in a specific area of the table upper panel 10, passing through the table upper panel 10;

a rotatably movable member (1) installed within the opening (30), both central parts of the rotatably movable member (1) including rotating axles formed thereon to allow the rotatably movable member (1) to move in up/down directions;

an input board (11) formed on a first surface of the rotatably movable member (1) for inputting various commands into a computer;

a flat board (12) formed on a second surface of the rotatably movable member (1), the flat board having the same horizontal level as that of the surface of the table upper panel (10) when the rotatably movable member (1) is turned over; and

a locking device (2) formed on a specific area of an inside circumference of the opening (30), for controlling movement of the rotatably movable member (1), the locking device (2) being placed at a corresponding edge of the rotatably movable member (1);

whereby the input board (11) and the flat board (12) are alternatively interchangeable as the rotatably movable member (1) turns over in the opening (30) of the table upper panel (10).

2. The computer table system as claimed in claim 1, wherein a rotating device (3) for rotating said rotatably movable member (1) in up/down direction is mounted between both sides of the rotatably movable member (1) and a corresponding area of the opening (30) of the table upper panel (10).



3. The computer table system as claimed in claim 2, wherein said rotating device (3) comprises:

- a driving motor (31);
- a reduction gear (32) mounted on an axle of the driving motor (31);
- a driven gear (39) mounted on an axle member (40) of the rotatably movable member (1);
- a chain (33) coupled to the driven gear (39); and
- a driving gear (34) mounted on an axle of the reduction gear (32) of the driving motor (31), for transferring a rotating power to the chain (33).

4. The computer table system as claimed in claim 2, wherein said rotating device (3) comprises bevel gears (35, 36) mounted between an axle (40) of the rotatably movable member (1) and a reduction gear (32) of a driving motor (31).

5. The computer table system as claimed in claim 2, wherein said rotating device (3) comprises:

- an axle member (40) of the rotatably movable member (1); and
- a manual handle (37) which is attachable and detachable to/from the axle member (40).

6. The computer table system as claimed in claim 2, wherein said rotating device (3) comprises:

- a pinion gear (108) mounted on an axle member (40) of the rotatably movable member (1);
- a rack gear (107) coupled to the pinion gear (108); and
- diving means for moving the rack gear (107) forwardly and backwardly.

7. The computer table system as claimed in claim 1, wherein the input board (11) formed on the first surface of the rotatably movable member (1) is

a keyboard.

8. The computer table system as claimed in claim 7, further comprising a CD-ROM driver (14) mounted on said keyboard of the rotatably movable member (1).

9. The computer table system as claimed in claim 7, further comprising a floppy disk driver (14) mounted on said keyboard of the rotatably movable member (1).

10. The computer table system as claimed in claim 7, further comprising a modem control means mounted on said keyboard of the rotatably movable member (1).

11. The computer table system as claimed in claim 7, further comprising a microphone (16) and a speaker (17) mounted on said keyboard of the rotatably movable member (1).

12. The computer table system as claimed in claim 7, wherein said input board of the rotatably movable member (1) comprises a keyboard, a CD-ROM driver, a floppy disk driver, a modem, a joy stick, a microphone, a speaker, and a mouse.

13. The computer table system as claimed in claim 1, wherein said locking device (2) comprises an elastically-repelling joint structure (21) formed on a circumference of the rotatably movable member (1), an end of the joint structure (21) being sloped; and a corresponding joint hole (22) formed in the opening (30), so as to rotate the rotatably movable member in a specific direction.

14. The computer table system as claimed in claim 13, wherein said

joint structure (21) of the locking device (2) includes a slope side (21a); an engaging side (21b); and a elastically-repelling member (21c) for elastically-repelling the joint structure (21).

15. The computer table system as claimed in claim 1, wherein said table upper panel (10) includes :

a left/right rotatable board (111);

an opening (112) on which said rotatable board (111) is slidingly mounted;

a rotatably movable member (100), for rotating in up/down direction, mounted on the left/right rotatable board (111); and

an opening 103 at which the rotatably movable member (100) is rotatable;

whereby the rotatable board (111) is rotatable in the left/right direction while the rotatably movable member (100) is also rotatable in the up/down direction.

16. The computer table system as claimed in claim 15, wherein a bearing member (104) is mounted on a bottom surface of the rotatable board (111), so as to slidingly rotate over an inside sill 105 of the opening 102.

17. The computer table system as claimed in claim 15, further comprising a screen display (80) mounted on the rotatable board (111).

18. The computer table system as claimed in claim 1 or 16, further comprising a screen display (8, 80) mounted on the table upper panel (10).

19. The computer table system as claimed in claim 1, further comprising a switching device for controlling the rotatably movable member (1) and the locking device (2).

20. The computer table system as claimed in claim 17, further comprising a view angle adjustment device including:

a driving motor (82);

a reduction gear (83) mounted on an axle of the driving motor (82);

a driven gear (85) mounted on an lower axle (81) of the screen display (8, 80); and

a driving gear (84) mounted on an axle of the reduction gear (83), for transferring a rotating power to the driven gear (85), whereby the screen display (8, 80) rotates with a specific angle.

21. The computer table system as claimed in claim 17, further comprising a view angle adjustment device including bevel gears (85, 86) mounted between a lower axle (81) of the screen display (8, 80) and a reduction gear (83) of a driving motor (82), so that a view angle of the screen display (8, 80) is freely adjustable based on the lower axle (81).

22. The computer table system as claimed in claim 17, wherein said screen display (8, 80) is a liquid crystal display (LCD).

23. The computer table system as claimed in claim 17, wherein said screen display (8, 80) is a cathode ray tube (CRT).

24. The computer table system as claimed in claim 19, further comprising a credit card and coin driving means for controlling the switching device so as to generate a switching signal based on injections of the credit card and coin.

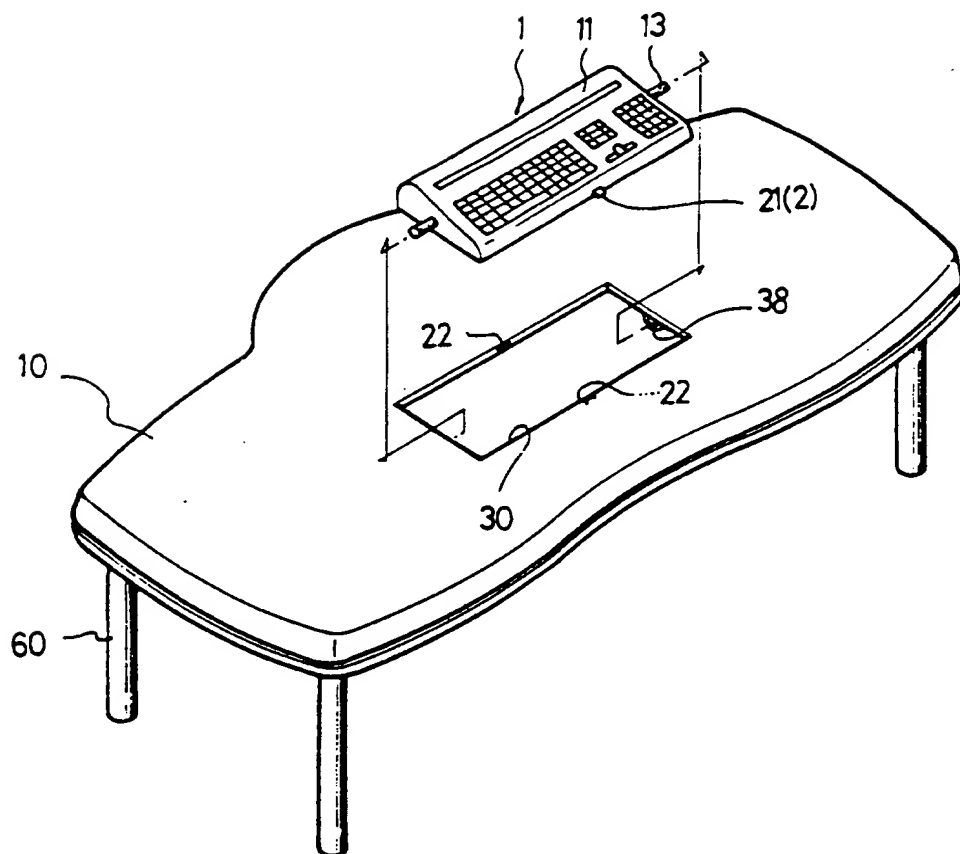
25. The computer table system as claimed in claim 1 or 14, further comprising guide grooves and guide protrusions respectively formed on an

inside circumference of the opening (30, 103) and corresponding side walls of the rotatably movable member (1, 100).

26. The computer table system as claimed in claim 1 or 14, further comprising a buffer member (50) formed along an inside circumference of the opening (30, 103) and corresponding side walls of the rotatably movable member (1, 100).

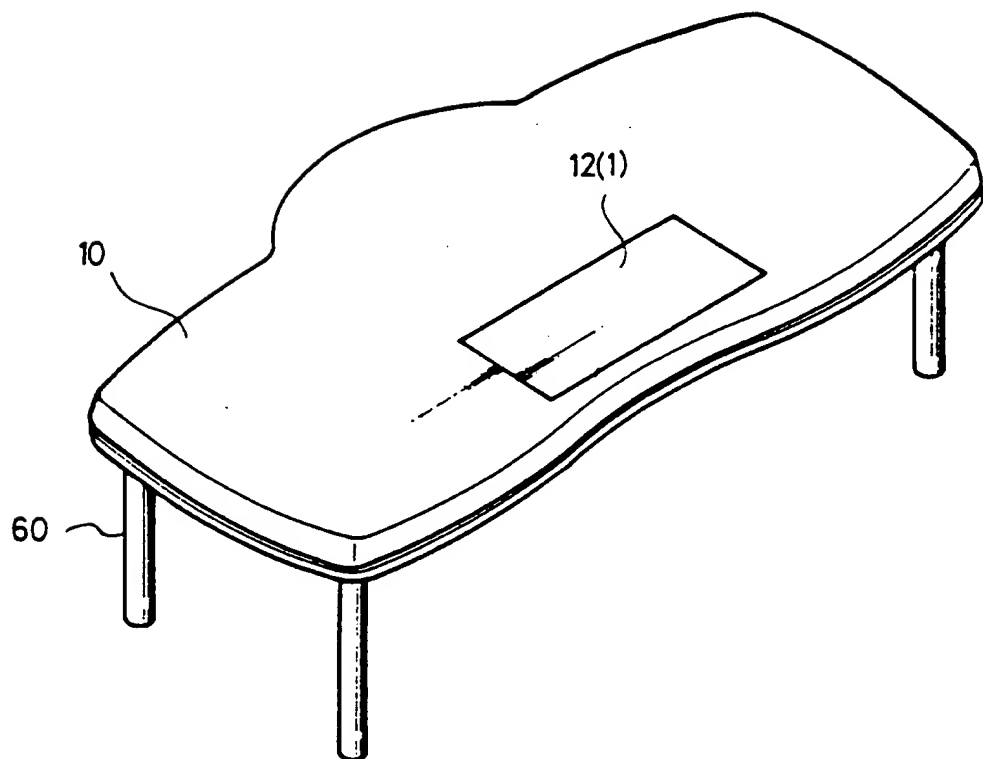
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FIG.1



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FIG.2



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FIG.3A

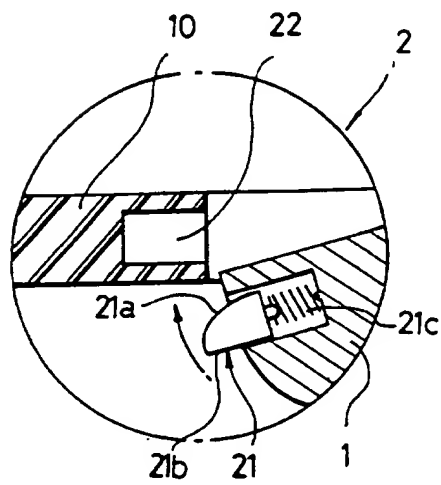
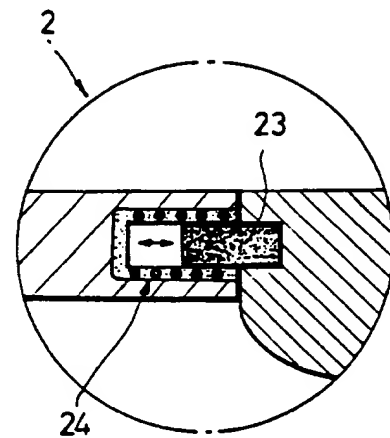


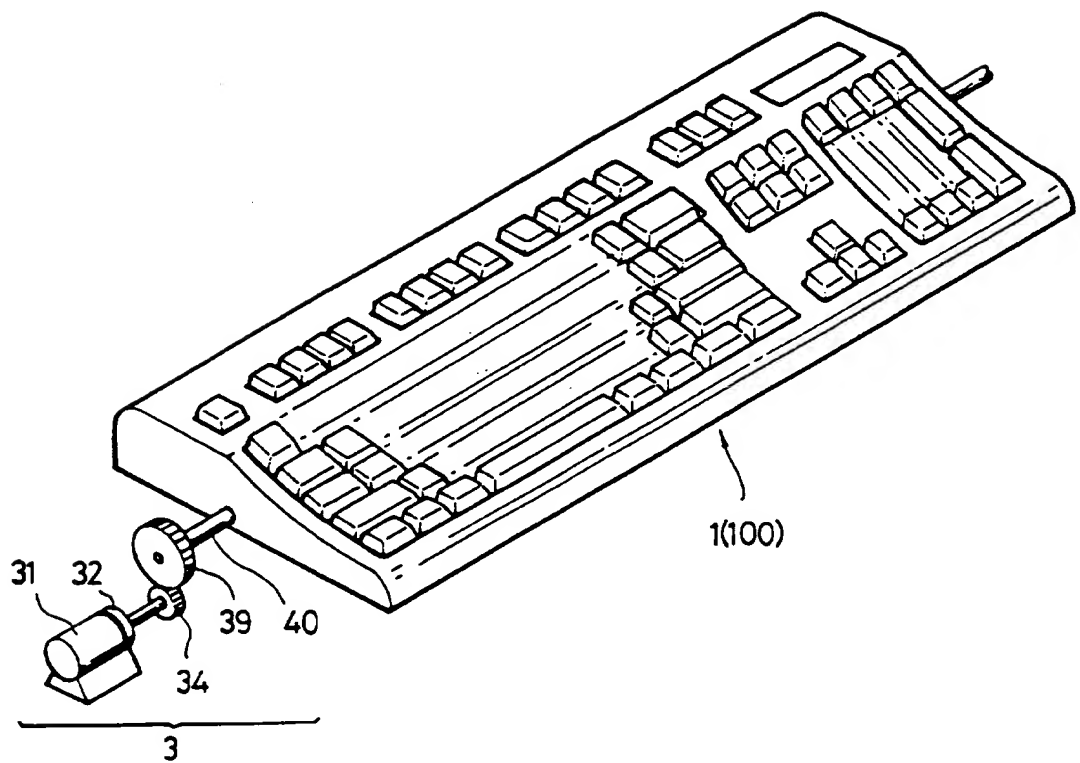
FIG.3B





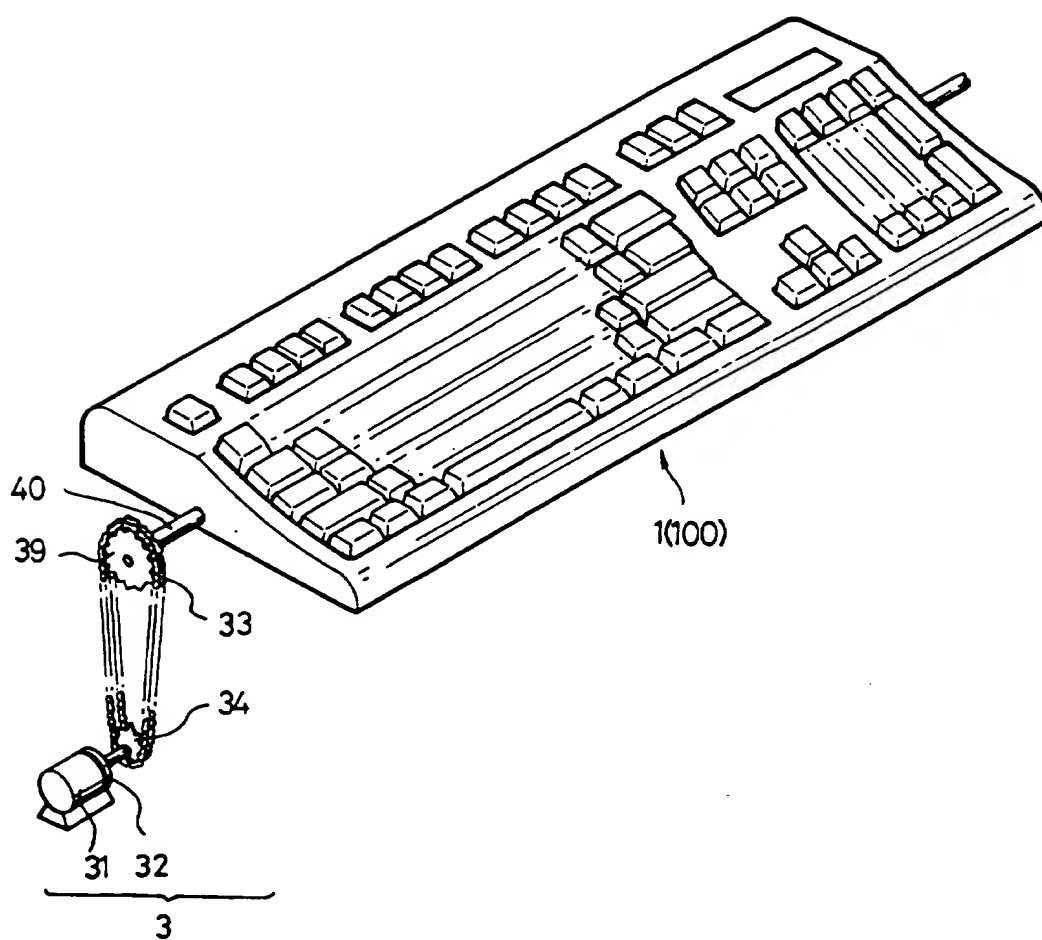
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FIG. 4



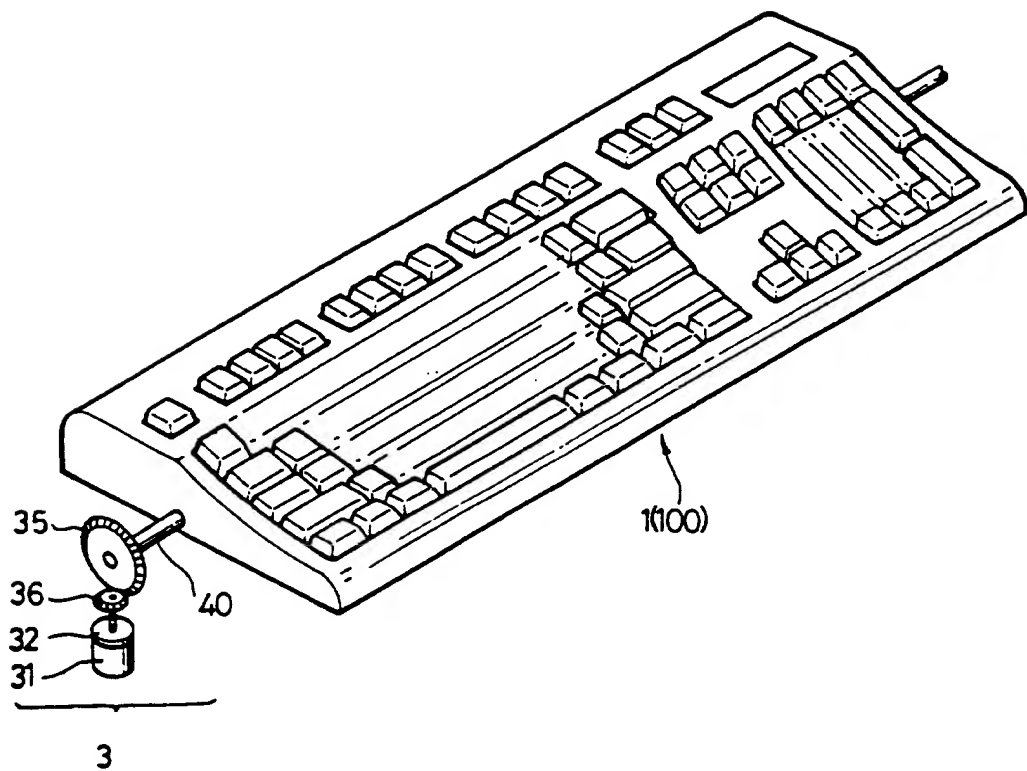
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FIG. 5



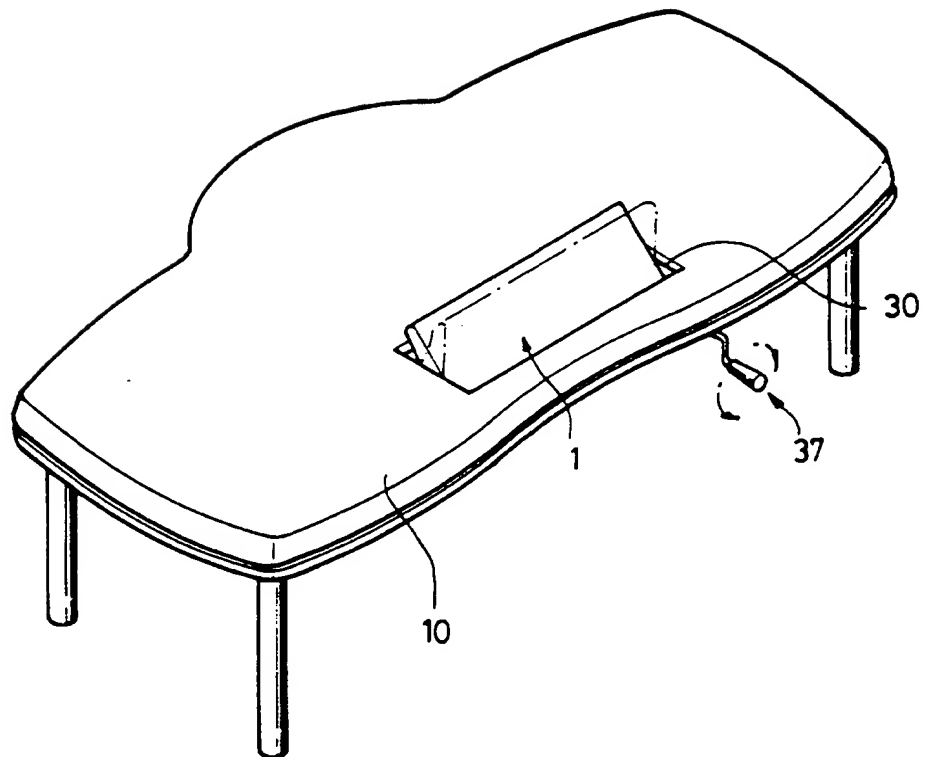
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FIG.6



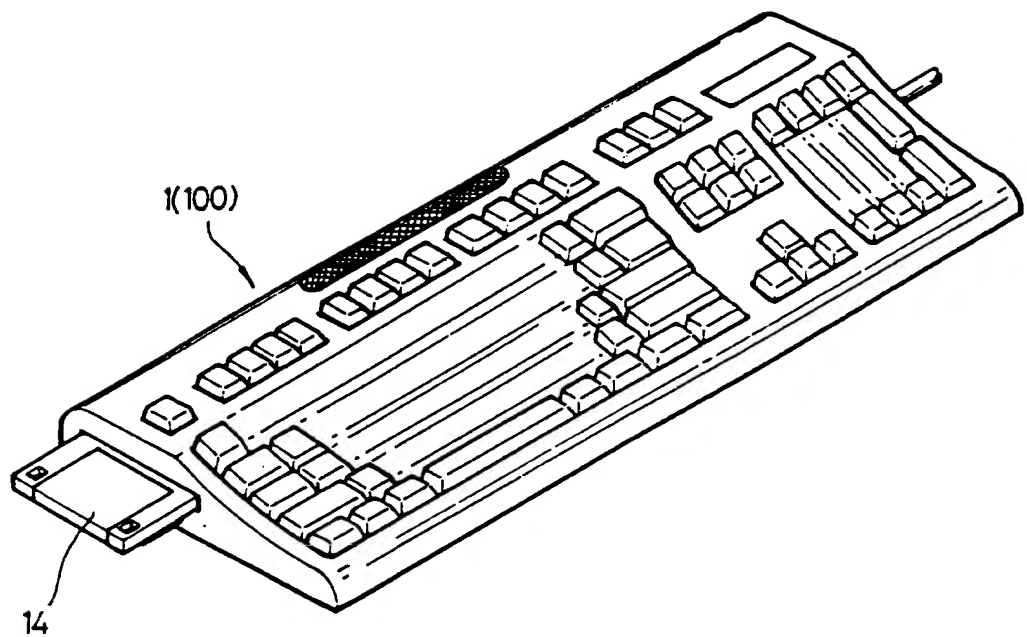
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**FIG.7**



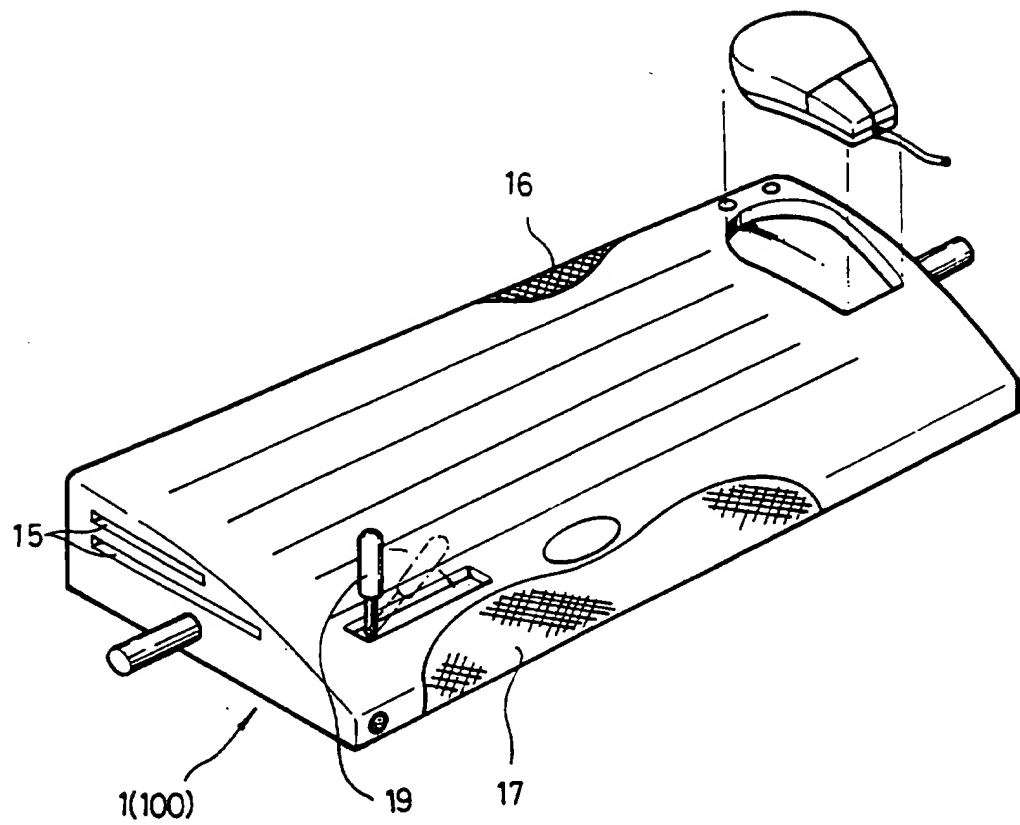
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FIG. 8



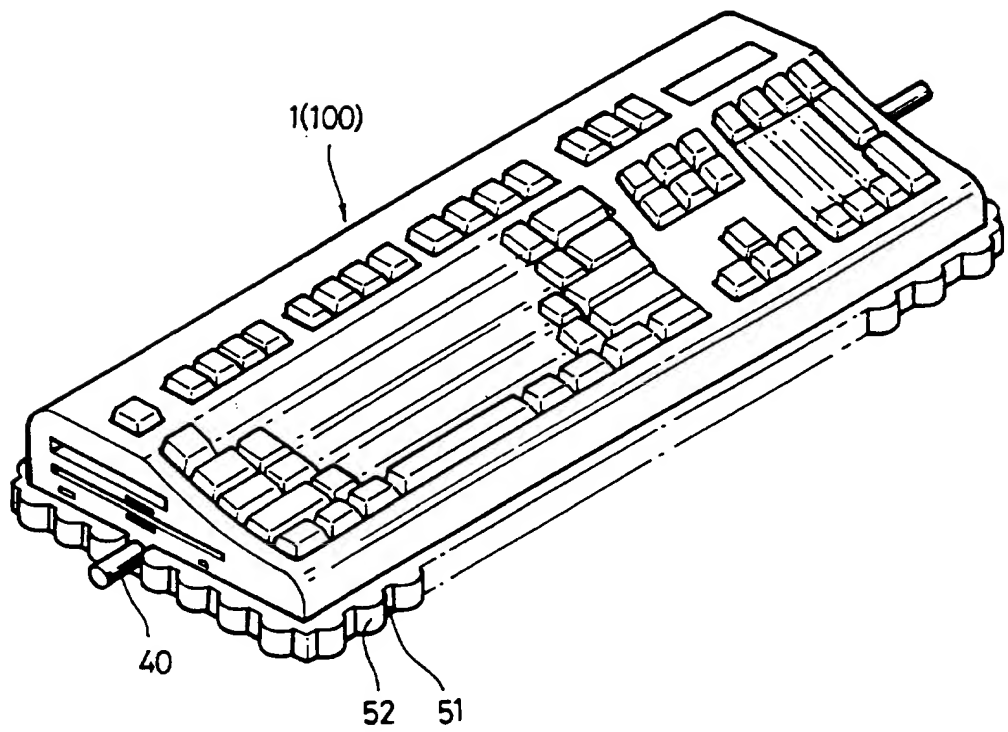
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FIG.9



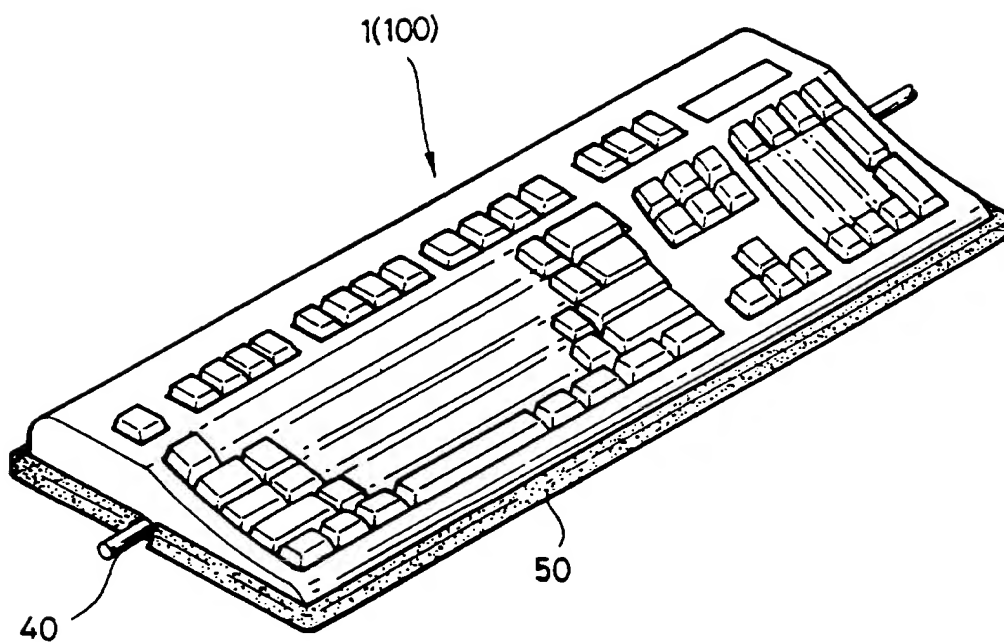
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FIG.10



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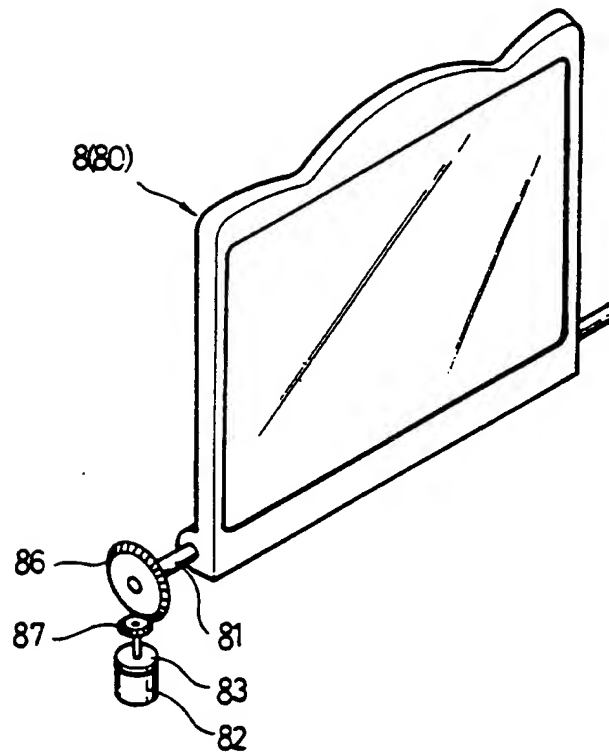
FIG.11





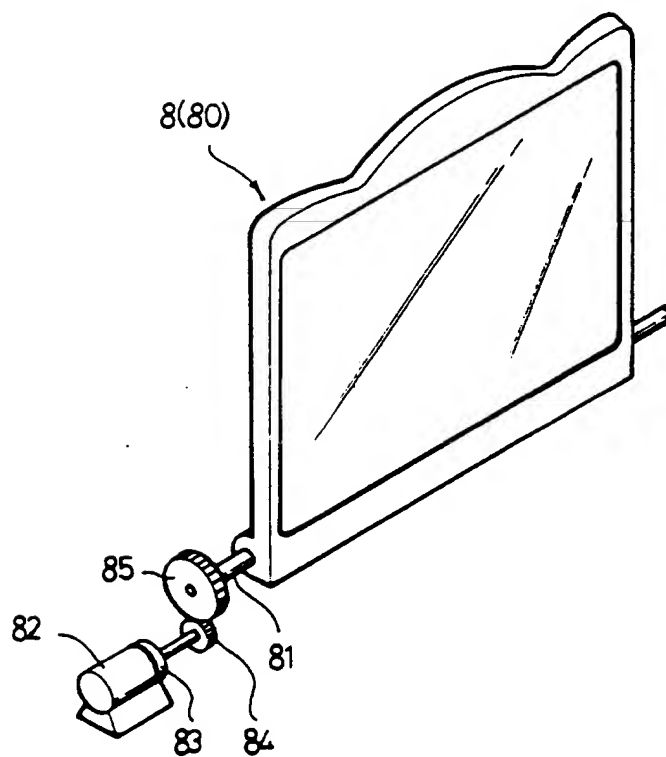
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FIG.12



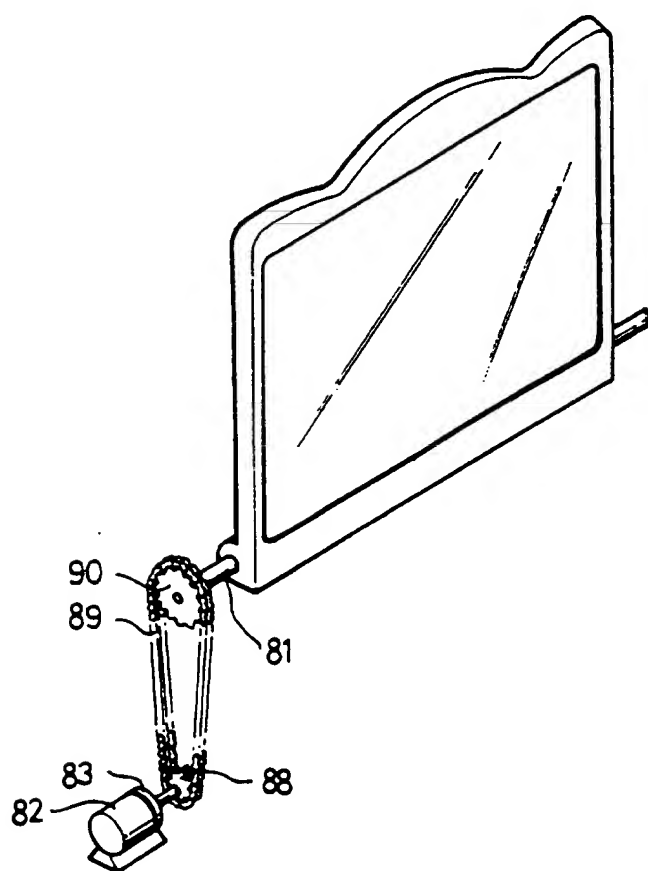
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FIG.13



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FIG.14



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FIG.15A

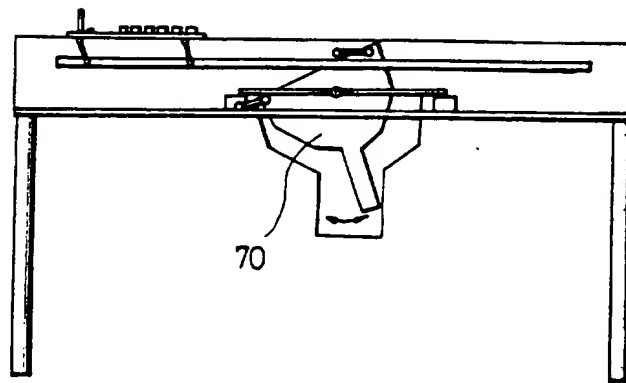
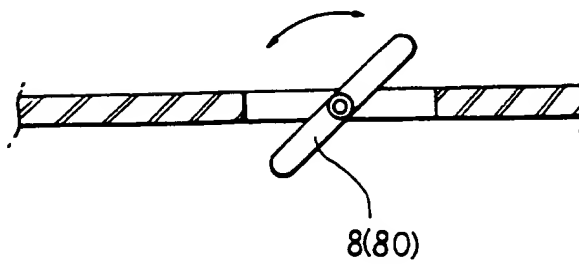
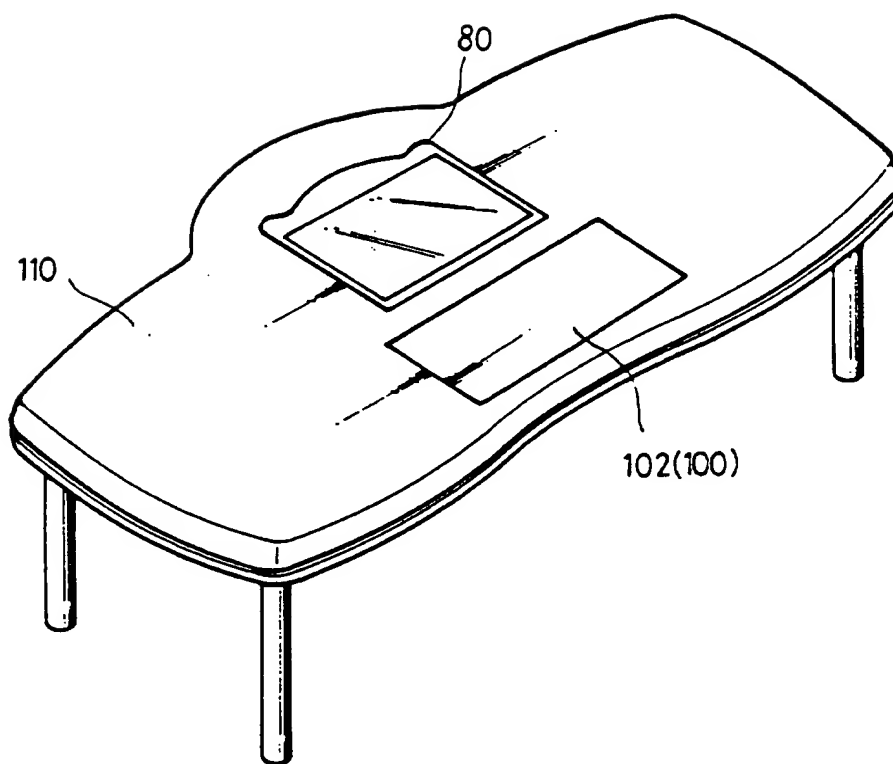


FIG.15B



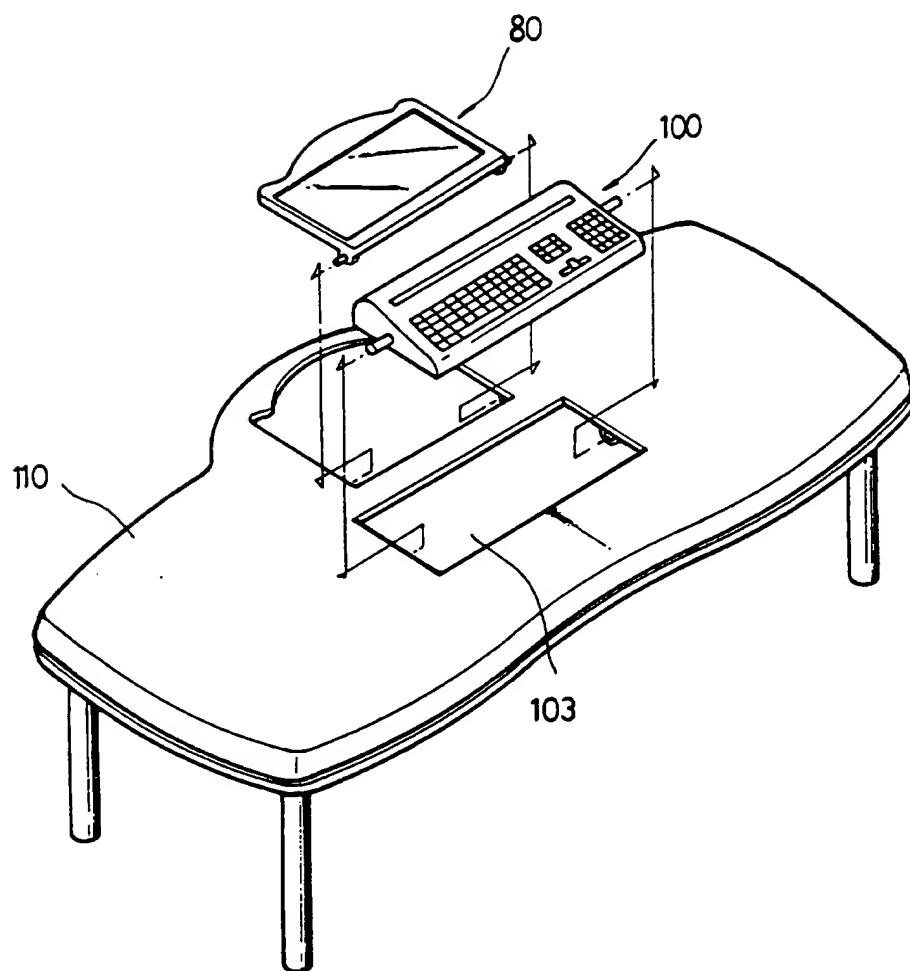
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FIG.16



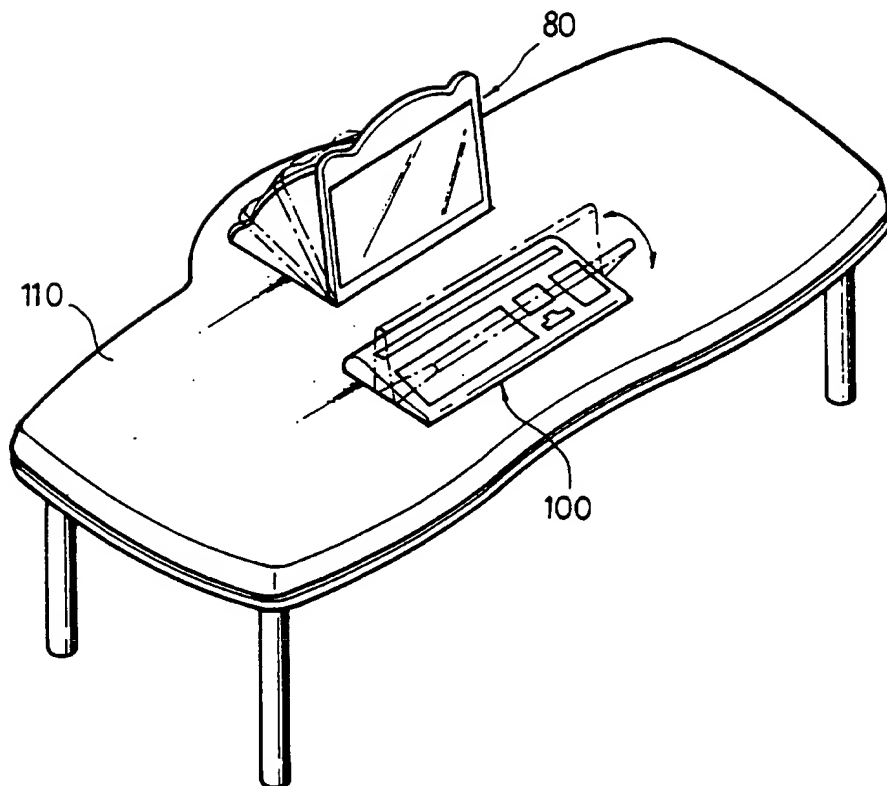
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FIG.17



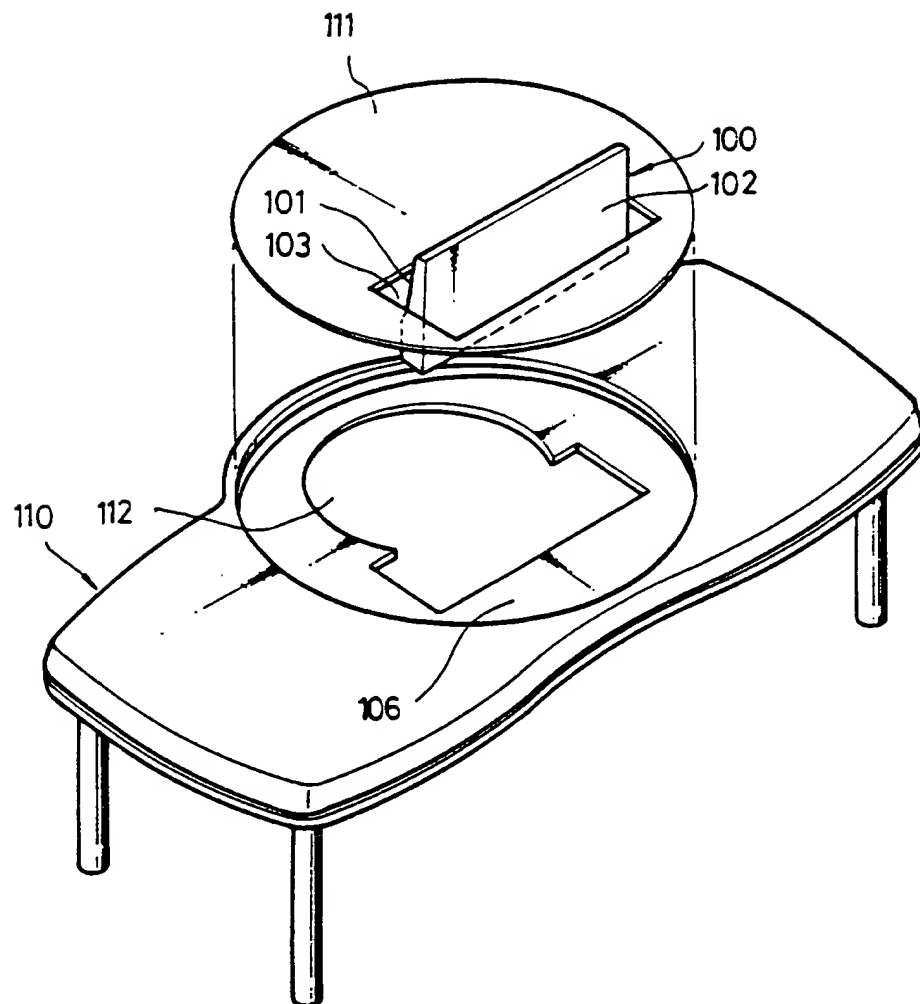
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FIG.18



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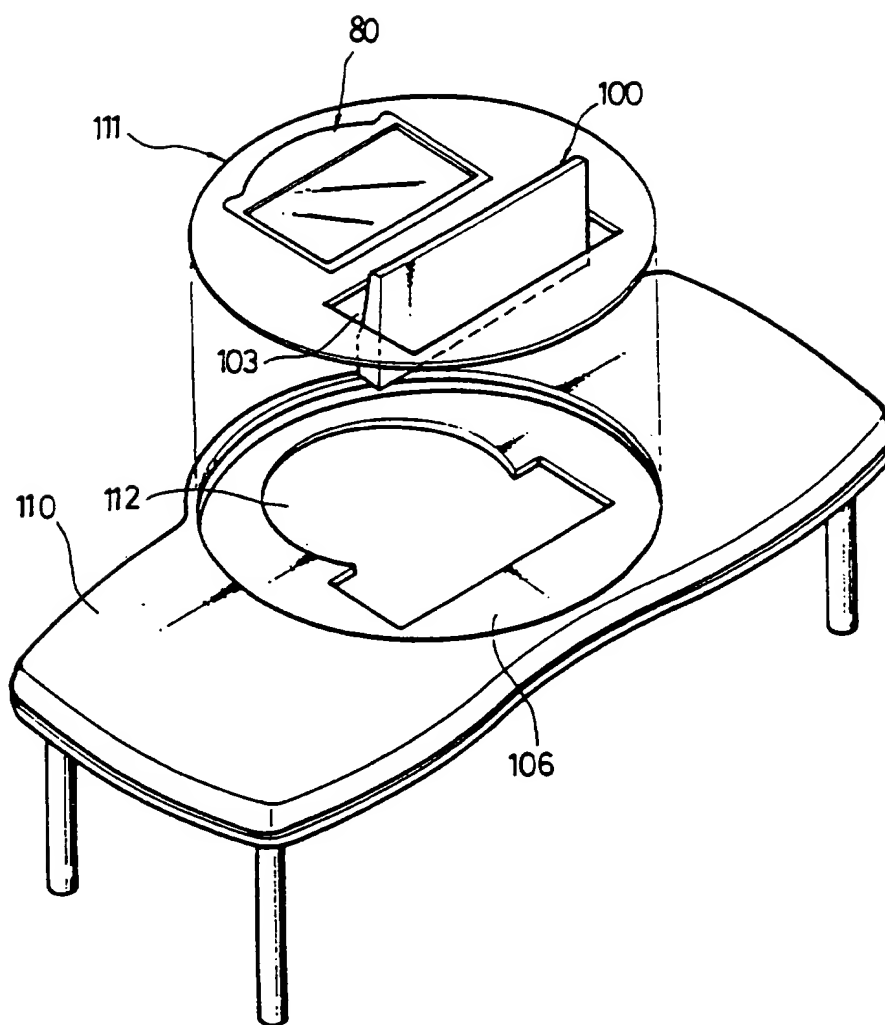
FIG.19





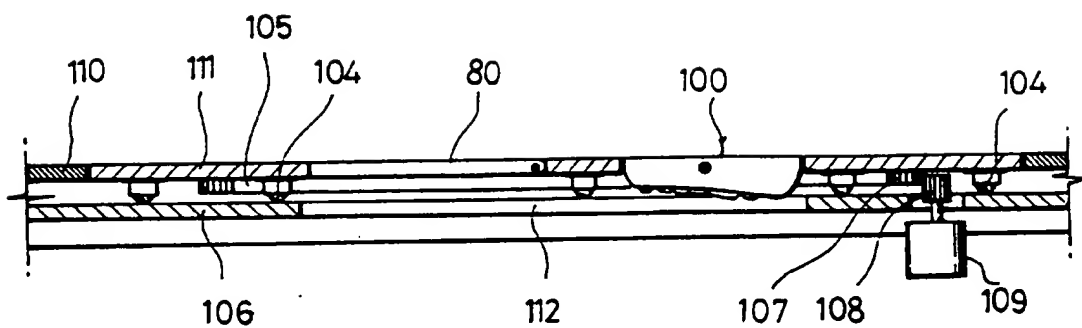
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FIG.20



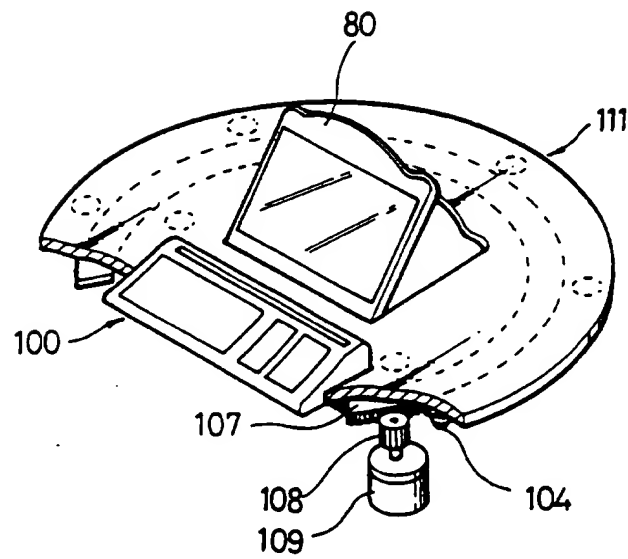
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FIG.21



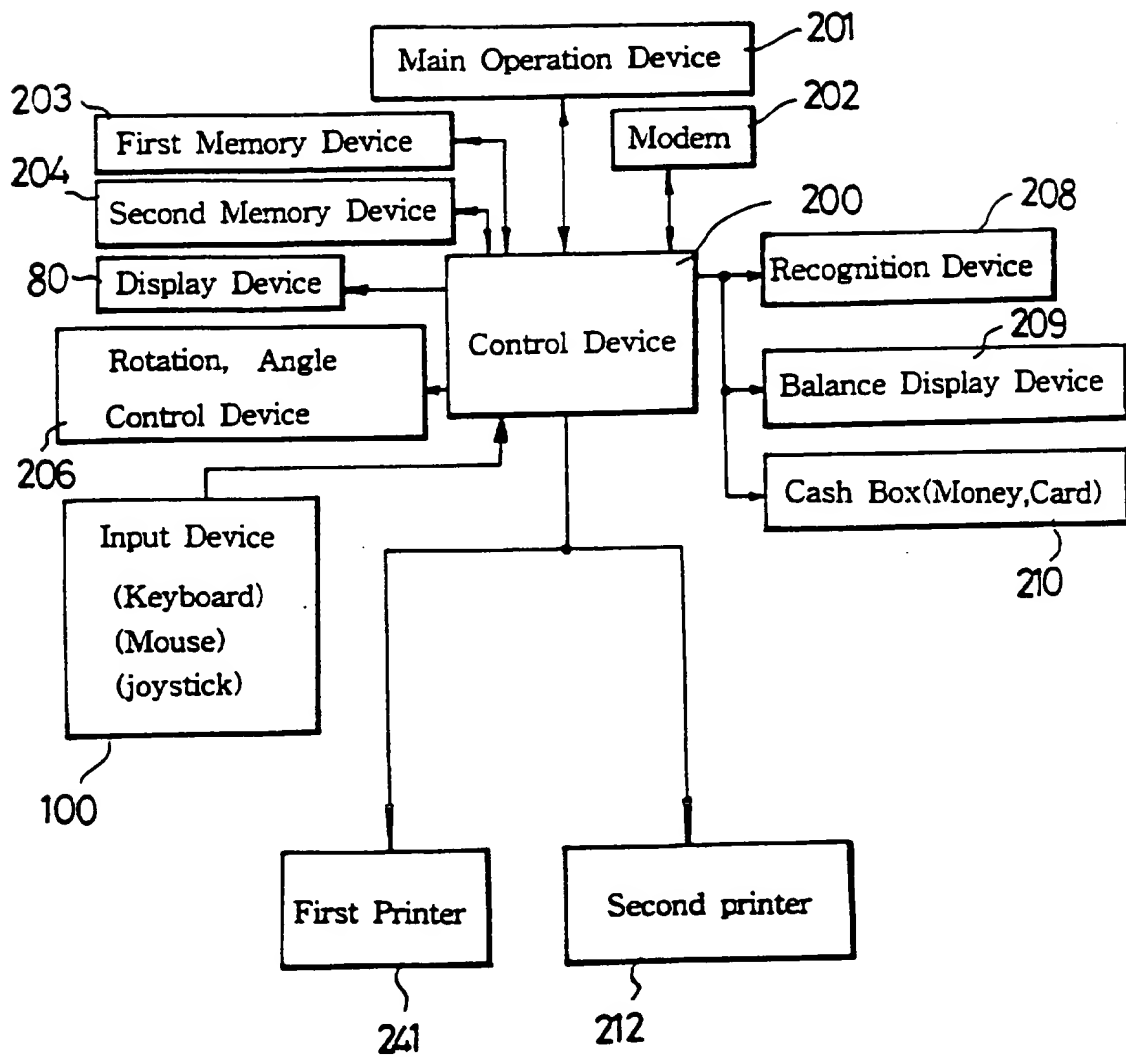
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FIG.22



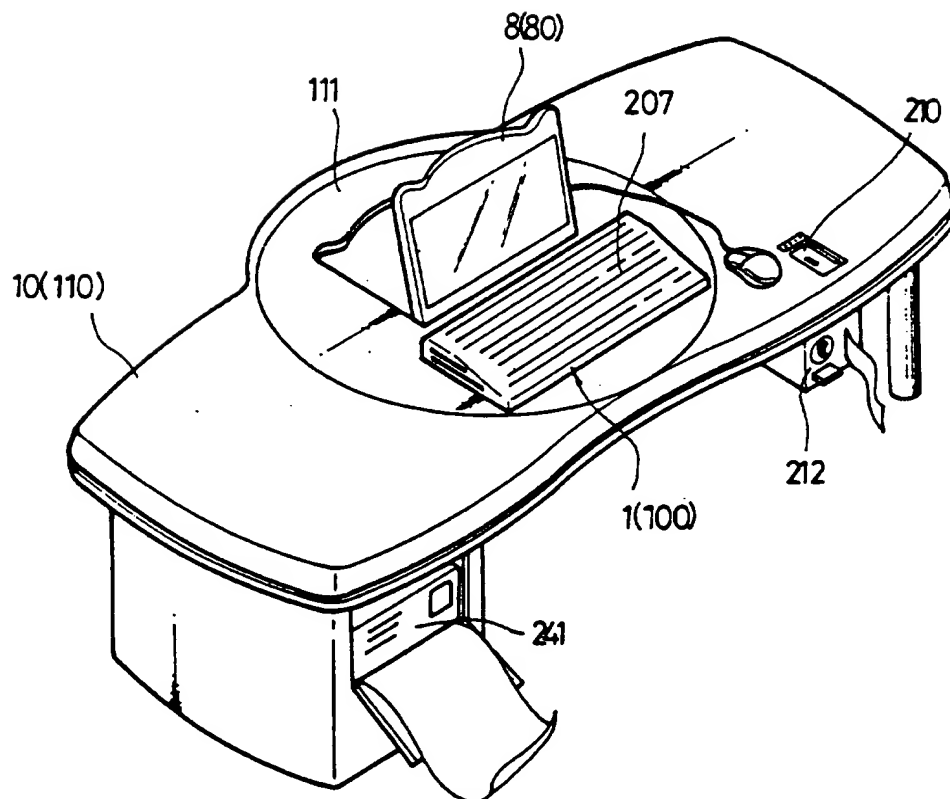
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FIG. 23



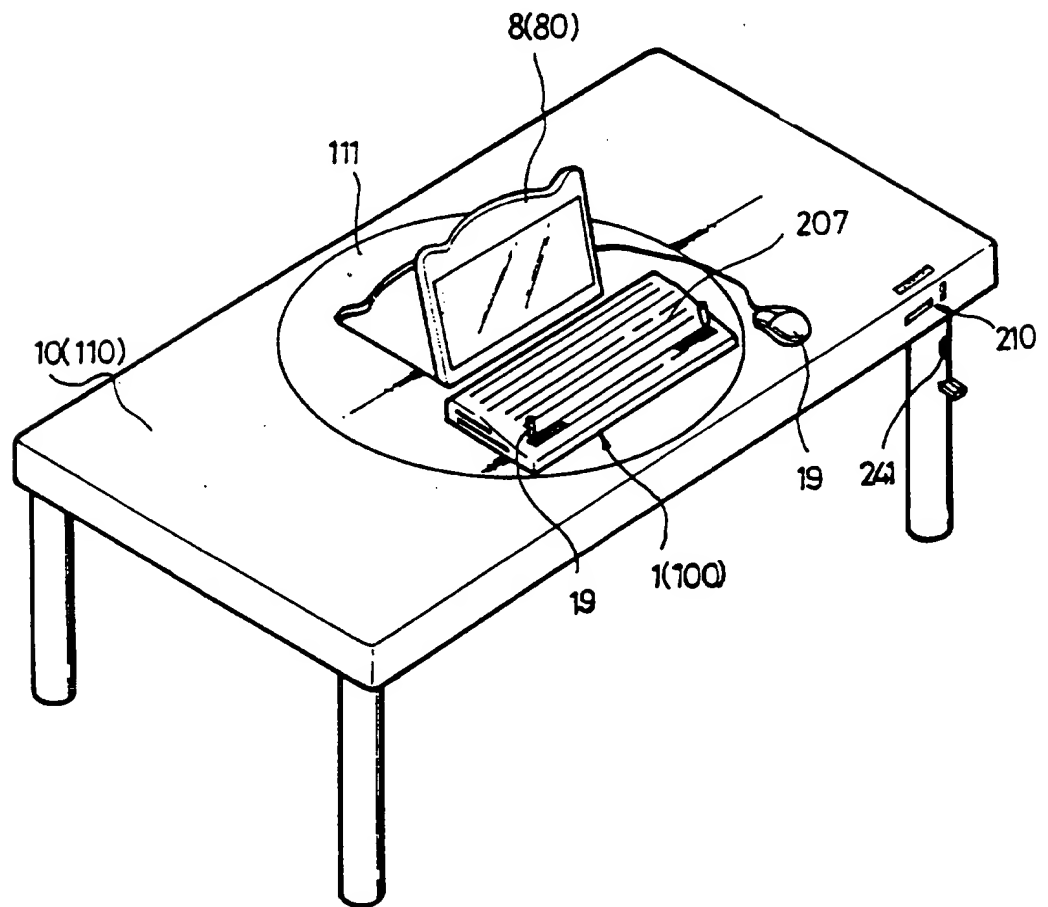
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FIG.24



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FIG.25



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR 96/00182

## A. CLASSIFICATION OF SUBJECT MATTER

IPC<sup>6</sup>: A 47 B 21/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>6</sup>: A 47 B 17/00-17/06, 21/00-21/04, 27/00, 37/00-37/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AT 96 321 B (GREINER) 10 March 1924 (10.03.24), fig. 1-5	1,2
A	WO 86/06 575 A1 (RITTEL) 20 November 1986 (20.11.86), fig. 3.	4-6,17-19,21,25,26
X		3,20
A	US 1 421 564 A (RECHE) 04 July 1922 (04.07.22), fig. 1, Pos. 6.	5
X	US 1 778 877 A (WILLIAMS) 21 October 1930 (21.10.30), fig. 6.	13,14
X	EP 0 191 702 A1 (GERARD) 20 August 1986 (20.08.86), fig. 1.	15,16
A		25,26
X	US 5 107 774 A (ALLEN) 28 April 1992 (28.04.92), fig. 5.	3,20
A		4,6,21

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

10 January 1997 (10.01.97)

Date of mailing of the international search report

20 January 1997 (20.01.97)

Name and mailing address of the ISA/ AT  
AUSTRIAN PATENT OFFICE  
Kohlmarkt 8-10  
A-1014 Vienna  
Facsimile No. 1/53424/535

Authorized officer

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Telephone No. 1/53424/373





# INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR 96/00182

Document AT 96 321 B shows a rotatably movable member (for a typewriter !!), installed within an opening. Document WO 86/06 575 A1 relates to a display screen table. Document US 1 421 564 A shows an office desk with a manual handle. Document US 1 778 877 A shows (Fig. 6) a support for a typewriter with a locking device, comprises an elastically - repelling joint structure. Document EP 0 191 702 A1 relates to a table with a rotatable board. Document US 5 107 774 A relates to a work surface that is angularly adjustable between a horizontal position and a vertical position.

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/KR 96/00182

In Recherchenbericht angeführtes Patentdokument Patent document cited In search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
AT B 96321		AT E 96321 AU A1 46130789 AU B2 605702 CA AA 2005196 DE CO 689102888 DE F2 689102888 EP A2 373827 EP A3 373827 EP B1 373827 HU A2 51897 HU B 206182 IL A0 925866 IL A1 925866 JP A2 2218613 JP B4 6051622 KR B1 9203979 PT A 925866 ZA A 8909508 US A 5071852	15-11-93 19-07-90 17-01-91 14-06-90 02-12-93 17-02-94 20-06-90 06-11-91 27-10-93 28-06-90 28-09-93 1-08-93 4-06-94 1-08-90 06-07-94 04-05-92 29-06-90 31-07-91 10-12-91
WD A1 8606575	20-11-86	AT E 54806 DE A1 3516850 DE CO 3672963 EP A1 3227888 EP B1 3227888 DE U1 8513857	15-08-90 13-11-86 20-08-90 27-05-87 25-07-90 05-03-87
US A 1421564		keine - none - rien	
US A 1778877		keine - none - rien	
EP 191702		DE CO 3683063 EP A1 191702 EP B1 191702 FR A1 2577476 FR B1 2577476	06-02-92 20-08-86 27-12-91 22-08-86 24-11-89
US A 5107774	28-04-92	keine - none - rien	